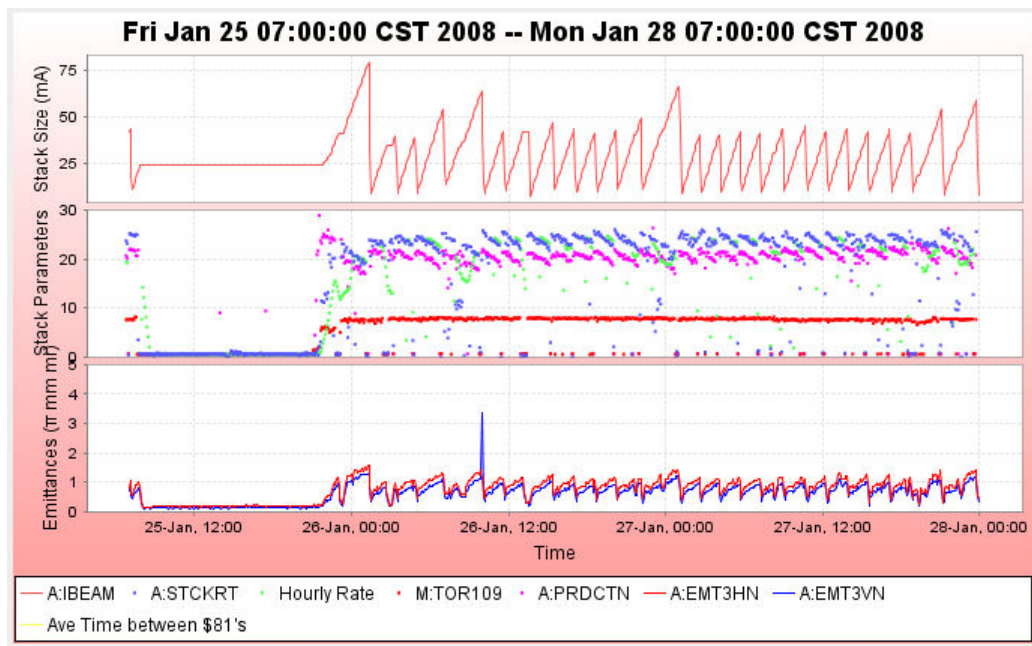


. Stacking

- Friday 16:20:
DRF1-3 was off hard, and fanback voltage was down to 4.3MV. We didn't want to run this way over the weekend, so we worked to get the station back online. The Final Bias supply had an OV trip. Power cycling the supply brought it back, but the station would still not turn on due to a driver inhibit. We found the 20KV Glassman final HV PS had a blown 6A fuse #2. We replaced the fuse and the station came back to life. Afterwards, we tuned up the stations.
- We went about 14 hours without stacking due to upstream accelerator problems. Lifetime with 24.4mA was just under 1,500 hrs.
- When beam returned, we completed normal iterations of stack and transfer.
- Beam on target:
 - Ran about 7.25×10^{12} at 11 turns on Saturday.
 - Sunday beam was lowered to 10 turns 7×10^{12} (MI and Booster problems).
 - We went back up to 11 turns, but only got back to about 7.1×10^{12} .
- We stacked a total of 1144mA (average of 381mA/day) over the weekend.
- Peak stack rates were 23.56mA/hr, 24.09mA/hr and 24.3mA/hr
- PLC09 hung this morning around 04:30am. This PLC interfaces devices in the A60 stub in the Pbar Tunnel. This covers Core 2-4GHz low and medium level as well as Stacktail low level. There is a reset parameter. A:PLC09 was given a reset. The babysitter had to be turned off in able to get the Core 2-4GHz system back on.



. Transfers

- SDA problems had the transfer tables and plots not working. SDA experts came in and fixed this over the weekend.
- We unstacked a total of 1,178mA and 1100e10 made it to the Recycler in 100 transfers over 32 sets.
- Accumulator to MI efficiency was 97%

- Accumulator to RR efficiency was 93%
- Transfer Issues
 - Transfer 6973 missing A:IBEAM1. Investigating.
 - Transfer 6976 lost a transfer due to an intermittent abort of the sequencer.
 - Transfer 6964 was only 88% efficient, due to the larger 80mA stack.

| Column 1 Pbar Transfer Shot # | Column 2 Recycler Shot # | Column 4 Transfer Time | | Column 21 A:IBEAMB sampled on \$91 (A:IBEAM1), E10 | Column 22 A:IBEAMB sampled on \$94 (A:IBEAM2), E10 | Unstacked (mA) | Column 23 R:BEAMS (R:BEAM E0[0]) pre xfer E10 | Column 24 R:BEAM (R:BEAM E0[1]) post xfer, E10 | Stashed | Acc to RR Eff | Column 27 MI DCCT SMALL BEAM (I:BEAMS), E10 | Column 28 MI Before Extraction (I:BEAM6), E10 | Acc to MI Eff | Acc to MI2 Eff | Transfers | Sets |
|-------------------------------|--------------------------|----------------------------|-------------|--|--|----------------|---|--|---------|---------------|---|---|---------------|----------------|-----------|------|
| | | 1/28/2008 | 7:00:00 AM | | | 1178.397 | | | 1099.58 | 0.93 | 1150.965 | 1143.119 | 97.67% | 97.01% | 100 | 32 |
| 6994 | 4456 | Monday, January 28, 2008 | 7:11:02 AM | 39.787 | 11.788 | 27.999 | 171.448 | 198.625 | 27.18 | 0.97 | 27.539 | 27.889 | 98.36% | 99.61% | 2 | 1 |
| 6993 | 4455 | Monday, January 28, 2008 | 5:37:10 AM | 40.788 | 10.588 | 30.200 | 143.958 | 172.606 | 28.65 | 0.95 | 29.581 | 29.571 | 97.95% | 97.92% | 3 | 1 |
| 6992 | 4454 | Monday, January 28, 2008 | 4:08:16 AM | 40.388 | 9.988 | 30.400 | 116.005 | 144.646 | 28.64 | 0.94 | 29.864 | 28.630 | 98.24% | 94.18% | 3 | 1 |
| 6991 | 4453 | Monday, January 28, 2008 | 2:41:57 AM | 39.388 | 9.588 | 29.800 | 87.940 | 116.263 | 28.32 | 0.95 | 29.555 | 29.066 | 99.18% | 97.54% | 3 | 1 |
| 6990 | 4452 | Monday, January 28, 2008 | 1:20:40 AM | 40.188 | 9.788 | 30.400 | 59.538 | 88.312 | 28.77 | 0.95 | 29.624 | 29.704 | 97.45% | 97.71% | 3 | 1 |
| 6989 | 4451 | Sunday, January 27, 2008 | 11:48:14 PM | 58.988 | 7.388 | 51.600 | 11.584 | 59.769 | 48.19 | 0.93 | 50.770 | 49.945 | 98.39% | 96.79% | 4 | 1 |
| 6988 | 4449 | Sunday, January 27, 2008 | 9:07:32 PM | 53.788 | 7.388 | 46.400 | 356.982 | 404.577 | 47.60 | 1.03 | 45.208 | 44.940 | 97.43% | 96.85% | 4 | 1 |
| 6987 | 4448 | Sunday, January 27, 2008 | 6:45:08 PM | 42.188 | 9.588 | 32.600 | 334.706 | 367.585 | 32.88 | 1.01 | 31.929 | 31.182 | 97.94% | 95.65% | 3 | 1 |
| 6986 | 4447 | Sunday, January 27, 2008 | 5:09:54 PM | 43.588 | 9.388 | 34.200 | 305.660 | 339.771 | 34.11 | 1.00 | 34.054 | 33.542 | 99.57% | 98.08% | 3 | 1 |
| 6985 | 4446 | Sunday, January 27, 2008 | 3:27:31 PM | 42.188 | 9.388 | 32.800 | 277.926 | 309.901 | 31.98 | 0.97 | 31.674 | 30.643 | 96.57% | 93.42% | 3 | 1 |
| 6984 | 4445 | Sunday, January 27, 2008 | 1:53:37 PM | 43.788 | 9.588 | 34.200 | 248.210 | 281.135 | 32.93 | 0.96 | 33.036 | 33.978 | 96.60% | 99.35% | 3 | 1 |
| 6983 | 4444 | Sunday, January 27, 2008 | 12:16:20 PM | 42.387 | 9.188 | 33.199 | 218.597 | 250.711 | 32.11 | 0.97 | 32.298 | 31.542 | 97.29% | 95.01% | 3 | 1 |
| 6982 | 4443 | Sunday, January 27, 2008 | 10:43:12 AM | 45.788 | 10.588 | 35.200 | 187.292 | 220.514 | 33.22 | 0.94 | 34.112 | 34.574 | 96.91% | 98.22% | 3 | 1 |
| 6981 | 4442 | Sunday, January 27, 2008 | 8:59:24 AM | 44.588 | 10.188 | 34.400 | 156.339 | 188.671 | 32.33 | 0.94 | 33.521 | 32.974 | 97.44% | 95.85% | 3 | 1 |
| 6980 | 4441 | Sunday, January 27, 2008 | 7:15:09 AM | 42.588 | 9.788 | 32.800 | 126.469 | 157.350 | 30.88 | 0.94 | 31.907 | 30.721 | 97.28% | 93.66% | 3 | 1 |
| 6979 | 4440 | Sunday, January 27, 2008 | 5:42:20 AM | 41.988 | 9.588 | 32.400 | 96.637 | 127.302 | 30.67 | 0.95 | 31.739 | 32.321 | 97.96% | 99.76% | 3 | 1 |
| 6978 | 4439 | Sunday, January 27, 2008 | 4:08:35 AM | 40.988 | 9.188 | 31.800 | 66.586 | 97.055 | 30.47 | 0.96 | 31.035 | 30.722 | 97.59% | 96.61% | 3 | 1 |
| 6977 | 4438 | Sunday, January 27, 2008 | 2:38:40 AM | 40.788 | 9.188 | 31.600 | 37.612 | 67.095 | 29.48 | 0.93 | 31.111 | 30.678 | 98.45% | 97.08% | 3 | 1 |
| 6976 | 4437 | Sunday, January 27, 2008 | 1:02:22 AM | 65.788 | 8.388 | 57.400 | 4.963 | 37.633 | 32.67 | 0.57 | 57.125 | 55.946 | 99.52% | 97.47% | 4 | 1 |
| 6975 | 4435 | Saturday, January 26, 2008 | 10:09:07 PM | 49.387 | 10.788 | 38.599 | 243.247 | 280.313 | 37.07 | 0.96 | 37.603 | 36.771 | 97.42% | 95.26% | 3 | 1 |
| 6974 | 4434 | Saturday, January 26, 2008 | 8:13:17 PM | 43.188 | 10.188 | 33.000 | 214.414 | 246.270 | 31.86 | 0.97 | 32.127 | 32.385 | 97.35% | 98.14% | 3 | 1 |
| 6973 | 4433 | Saturday, January 26, 2008 | 6:38:18 PM | 41.388 | 8.588 | 32.800 | 184.222 | 216.152 | 31.93 | 0.97 | 32.367 | 31.992 | 98.68% | 97.54% | 3 | 1 |
| 6972 | 4432 | Saturday, January 26, 2008 | 5:02:56 PM | 43.788 | 8.988 | 34.800 | 152.016 | 185.553 | 33.54 | 0.96 | 34.014 | 34.276 | 97.74% | 98.49% | 3 | 1 |
| 6971 | 4431 | Saturday, January 26, 2008 | 3:23:38 PM | 46.788 | 10.188 | 36.600 | 118.501 | 152.935 | 34.43 | 0.94 | 35.668 | 35.454 | 97.45% | 96.87% | 3 | 1 |
| 6970 | 4430 | Saturday, January 26, 2008 | 1:33:20 PM | 41.988 | 6.988 | 35.000 | 84.846 | 118.909 | 34.06 | 0.97 | 34.455 | 34.002 | 98.44% | 97.15% | 3 | 1 |
| 6969 | 4429 | Saturday, January 26, 2008 | 11:37:37 AM | 42.188 | 9.388 | 32.800 | 54.262 | 85.296 | 31.03 | 0.95 | 31.972 | 32.120 | 97.48% | 97.93% | 3 | 1 |
| 6968 | 4428 | Saturday, January 26, 2008 | 10:00:03 AM | 64.988 | 8.388 | 56.600 | 2.617 | 54.533 | 51.92 | 0.92 | 54.673 | 54.310 | 96.60% | 95.95% | 4 | 1 |
| 6967 | 4426 | Saturday, January 26, 2008 | 7:01:26 AM | 54.188 | 12.188 | 42.000 | 119.632 | 158.828 | 39.20 | 0.93 | 40.797 | 40.382 | 97.14% | 96.15% | 3 | 1 |
| 6966 | 4425 | Saturday, January 26, 2008 | 4:54:40 AM | 40.188 | 8.988 | 31.200 | 90.476 | 120.268 | 29.79 | 0.95 | 30.652 | 29.860 | 98.24% | 95.71% | 3 | 1 |
| 6965 | 4424 | Saturday, January 26, 2008 | 3:23:46 AM | 40.588 | 8.788 | 31.800 | 60.465 | 90.757 | 30.29 | 0.95 | 31.303 | 31.365 | 98.44% | 98.63% | 3 | 1 |
| 6964 | 4423 | Saturday, January 26, 2008 | 1:21:48 AM | 79.388 | 9.388 | 70.000 | -0.233 | 61.313 | 61.55 | 0.88 | 67.038 | 68.033 | 95.77% | 97.19% | 4 | 1 |
| 6963 | 4422 | Friday, January 25, 2008 | 7:07:11 AM | 43.788 | 9.988 | 33.800 | 128.221 | 160.066 | 31.85 | 0.94 | 32.614 | 33.601 | 96.49% | 99.41% | 3 | 1 |

- Studies Work
 - Debuncher tune space investigation:
 - <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=35&scroll=false&load=>
 - Explored both sides of the vertical 3/4 tune.
 - Explored changes in Chromaticity.
 - One shot reverse protons during stacking
 - [http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=37&anchor=191944&hilite=19:19:44-](http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=37&anchor=191944&hilite=19:19:44- target=_top) target=_top> arrowgif
 - Experts finished wriing the TBT portion of the rapid transfers aggregate. The one shot TLGs are 21 seconds long,.

• Requests

- Cycle Debuncher Busses the next time we have a 20 minute or more downtime. **The Run Co has approved this.**
- Debuncher Momentum Cooling, Phase 1:

- Characterize - 1 hr of greatly diminished stacking
 - Trombone changes
 - Characterize again - another 1 hr.
 - One expert is away from the lab today, so tomorrow would be better, but could do today if the opportunity arises.
 - The cooling characterizations require a long cycle time (maybe as long as 8 seconds), and greatly diminished stacking (only one band of the Momentum cooling is on during these measurements). May not be compatible with SY120.
 - **Run Co is holding off on this study until later in the week.**
- One shot reverse protons during stacking
 - Continue development.
-
- Other Notes
 - Paul's Numbers
 - Saturday, January 26
 - Most in an hour: 23.56 mA at Sat Jan 26 05:59:55 CST 2008
 - Best: 24.69 mA on 09-Jan-08
 - Average Production 20.23 e-6/proton Best: 23.53 e-6/proton on 11/11/2007
 - Average Protons on Target 5.93 e12 Best: 8.77 e12 on 07/24/2007
 - Largest Stack .00 mA Best: 271.01 mA on 11/14/2007
 - Sunday, January 27
 - Most in an hour: 24.09 mA at Sat Jan 26 19:44:05 CST 2008
 - Best: 24.69 mA on 09-Jan-08
 - Average Production 18.23 e-6/proton Best: 23.53 e-6/proton on 11/11/2007
 - Average Protons on Target 7.10 e12 Best: 8.77 e12 on 07/24/2007
 - Largest Stack .00 mA Best: 271.01 mA on 11/14/2007
 - Monday, January 28
 - Most in an hour: 24.30 mA at Mon Jan 28 00:56:01 CST 2008
 - Best: 24.90 mA on 24-Jan-08
 - Average Production 18.79 e-6/proton Best: 23.53 e-6/proton on 11/11/2007
 - Average Protons on Target 6.60 e12 Best: 8.77 e12 on 07/24/2007
 - Largest Stack 58.87 mA Best: 271.01 mA on 11/14/2007
 - Al's Numbers
 - Stacking
 - Pbars stacked: 1144.31 E10
 - Time stacking: 54.70 Hr
 - Average stacking rate: 20.92 E10/Hr
 - Uptime
 - Number of pulses while in stacking mode: 88014
 - Number of pulses with beam: 80856
 - Fraction of up pulses was: 91.87%
 - The uptime's effect on the stacking numbers
 - Corrected time stacking: 50.25 Hr
 - Possible average stacking rate: 22.77 E10/Hr
 - Recycler Transfers
 - Pbars sent to the Recycler: 1145.93 E10
 - Number of transfers : 98
 - Number of transfer sets: 31
 - Average Number of transfer per set: 3.16
 - Time taken to shoot: 04.62 Hr
 - Time per set of transfers: 08.95 min
 - Transfer efficiency: 95.59%
 - Other Info
 - Average POT : 7.05 E12
 - Average production: 20.06 pbars/E6 protons
 - Future of Debuncher Cooling Studies

Good afternoon,

Good afternoon,

Valeri, Steve, and I met this afternoon to compare our analysis of the debuncher momentum cooling studies of the last few weeks. We have reached a consensus on some delay and gain changes to the system based on data taken Dec. 19 and Jan. 17. We each came up with optimum results, but some of them are not realizable due to physical constraints on delays and gain. All of these improvements may only generate a few percent overall improvement to the momentum cooling. We propose to perform the changes in two stages.

The first is a set of solutions by changing delays on the system trombones. This will not require a tunnel access and can be done parasitically while stacking. We have concluded that changes within the available range of the trombones are only a small fraction of one percent worse than the optimum calculated. During normal stacking cycles (2.2 seconds) we will first characterize the cooling performance of all four bands by doing a super cycle of averages on the 74 MHz Longitudinal schottky. We then make the tbone changes and remeasure the momentum width. We must be able to measure a few percent improvement before proceeding with further changes. If the stacking with the changes looks acceptable, we should keep them in for some days to see if there really is any overall improvement.

The second stage would be to do the gain equalization in the tunnel. Here again, only a few percent gain on paper.

Agreed upon tbone changes.

Band 1: vert upper -206 ps, horiz upper -204 ps

Band 2: no changes

Band 3: horiz lower +160ps, vert upper +149ps, horiz upper +149 ps

Band 4: vert lower -253ps, horiz lower +148ps, vert upper -105ps, horiz upper -250ps

Agreed upon gain changes

Band 1: upper remove 4 dB

Band 2: lower remove 3 dB, upper remove 2 dB

Band 3: lower add 1 dB

Band 4: lower remove 2 dB

regards,

Ralph